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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the Board of Patent Appeals and Interferences

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Ex Parte:	DOLBEAR, CATHERINE MARY
Application Number:	10/070,069
Filing Date:	March 4, 2002
Title:	Method and Apparatus for Video Encoding
Group:	2613
Examiner:	ANAND SHASHIKANT RAO

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BRIEF ON BEHALF OF APPELLANTS UNDER 37 CFR 41.37Valerie M. Davis  
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CONTENTS

I. <u>REAL PARTY IN INTEREST</u> .....	3
II. <u>RELATED APPEALS AND INTERFERENCES</u> .....	3
III. <u>STATUS OF CLAIMS</u> .....	3
IV. <u>STATUS OF AMENDMENTS</u> .....	4
V. <u>SUMMARY OF CLAIMED SUBJECT MATTER</u> .....	4
VI. <u>GROUND OF REJECTION TO BE REVIEWED ON APPEAL</u> .....	4
VII. <u>ARGUMENT</u> .....	5
VIII. <u>CLAIMS APPENDIX</u> .....	10
IX. <u>EVIDENCE APPENDIX</u> .....	12
IX. <u>RELATED PROCEEDINGS APPENDIX</u> .....	12

I. REAL PARTY IN INTEREST

The name of the real party in interest for purposes of this appeal is Motorola, Inc., a Delaware corporation.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals of interferences known to the Applicant, the Applicant's legal representative, or assignee which would directly affect or be directly affected by or having a bearing on the Board's decision in this pending appeal.

III. STATUS OF CLAIMS

Claims 1-3 and 5-11 remain in the application. Claims 1-3, 5-7 and 9-11 are being appealed. Claims 1-3, 5-7 and 9-11 stand or fall together.

In a final Office Action dated June 6, 2005, the Examiner rejected Claims 1-3, 5-7 and 9-11 under 35 U.S.C. § 102(b) as being anticipated by Wong (USPN 6,037,985).

The Examiner has allowed Claim 8.

IV. STATUS OF AMENDMENTS

No amendments to the claims have been made subsequent to the final office action mailed June 6, 2005.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Novel methods for enhancing a video stream using pictures in at least two layers (i.e., an enhancement layer and at least one other layer) are recited in the claims. Specifically, a given parameter of a bidirectionally predicted picture (B picture), for example, in an enhancement layer is determined with respect to the same parameter but for a picture in another layer. The parameters include peak signal-to-noise ratios (PSNR), bit allocation and temporal position of the B picture (Specification p. 5, line 26 to p. 6, line 16).

VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether Claims 1-3, 5-7 and 9-11 are patentable under 35 U.S.C. §102(b) over Wong?

## VII. ARGUMENT

(a) Claims 1-3, 5-7 and 9-11 are rejected under 35 U.S.C. § 102(b) as being anticipated by Wong (U.S. Patent No. 6,037,985).

MPEP § 2131 provides:

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F. 2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). “The identical invention must be shown in as complete detail as contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim ....

Regarding Claims 1-3, the Examiner asserts that Wong anticipates (i.e., discloses all elements of) Appellant’s claimed invention (Office Action, June 6, 2005, page 2). It is noted that the Examiner’s reliance upon Wong appears to be misplaced.

Contrary to the Examiner’s position that all elements are disclosed in the Wong reference: the limitations of “peak signal-to-noise ratios of bidirectionally predicted pictures in an enhancement layer are determined with reference to the peak signal-to-noise ratios of pictures in another layer” as recited in Claim 1; the limitations of “the number of bits allocated to encode a bidirectionally predicted picture of an enhancement layer is determined with reference to the number of bits used to encode a picture of another layer” as recited in Claim 2; and the limitations of “temporal positions of predicted pictures in a enhancement layer are determined to be spaced evenly with reference to temporal positions of pictures in other layers” as recited in Claim 3 are not disclosed in Wong, so the rejection is unsupported by the art and should be withdrawn.

Described by Wong is in general a method that relates to video compression and more specifically a methodology for “macroblock-level (MB-level) bit allocation” (col. 3, lines 17-18). As argued in more detail below by reference to specific citations to Wong, the methodology disclosed therein differs from the claimed inventions in that the Wong methodology addresses providing only for one parameter (i.e., bit level allocation) of a picture and the determination of that parameter is based on information found within that same picture (which is inherently in the same layer) as opposed to the parameter being based on information found within a picture in another layer as is recited in the claimed inventions.

A brief discussion of the problem addressed by the Wong reference will further aid in understanding the differences between this reference and the claimed inventions. In the background section, Wong describes a prior art method of bit allocation, wherein “the number of bits to code a picture is set a priori without looking at the content of the picture” (col. 2, lines 43-44). Wong further states that “[this] rate control scheme cannot take advantage of the variation in coding complexity *within a picture* . . . possibly [and undesirably] resulting in large quality variations *within a picture*” (col. 3, lines 2-5). The Wong invention addresses this problem by using certain content within the picture itself to determine bit allocation. Specifically, Wong states “the present invention provides macroblock-level (MB-level) bit allocation using a tradeoff of picture average quality and local distortion *within the picture*” (col. 3, lines 17-19). That the disclosed invention is based on single layer processing within a picture is further clarified in the following language, wherein Wong discloses that “in particular, the preferred embodiments limit look-ahead *to just within a picture*, that is, the encoder is allowed to process the MBs within a picture . . . a multiple number of times. . . The preferred embodiments

process each picture in three passes to find the set of Q-values for the MBs in the picture" (col. 3, lines 63-67; col. 4, lines 24-25).

Accordingly, since the Wong reference discloses determining bit allocation for a picture using content within that same picture (inherently in the same layer), this reference correspondingly fails to disclose the limitations of "peak signal-to-noise ratios of bidirectionally predicted pictures in an enhancement layer are determined with reference to the peak signal-to-noise ratios of pictures in another layer" as recited in Claim 1; the limitations of "the number of bits allocated to encode a bidirectionally predicted picture of an enhancement layer is determined with reference to the number of bits used to encode a picture of another layer" as recited in Claim 2; and the limitations of "temporal positions of predicted pictures in a enhancement layer are determined to be spaced evenly with reference to temporal positions of pictures in other layers" as recited in Claim 3.

In a response to an office action dated August 16, 2004, Appellant presented support for the above general argument that Wong discloses determining a parameter of a picture based on information found within that same picture (which is inherently in the same layer) as opposed to the parameter being based on information found within a picture in another layer as is recited in the claimed inventions. In the final office action dated June 6, 2005, the Examiner provided a rather convoluted response thereto, wherein the essence of the response appeared to be that such a difference between Wong and the claimed inventions was not explicitly disclosed in Wong but was inherently included therein. Specifically, at pages 2-3 the Examiner states "While it is noted that the citation in question shows the ability of Wong to compute PSNRs of a frame based on different parts of the frame (i.e., background versus foreground), Wong discloses that since the method is directed towards the MPEG standard, this would inherently include the scalability that

is discussed in conjunction with the disclosure of the MPEG-2 standard (Wong: column 1, lines 50-67; column 2, lines 1-2). The scalability of the MPEG-2 standard as implemented by Wong inherently has the lower resolution image as a base layer and higher resolutions being achieved through enhancement layer data. As such, the teaching of Wong's PSNRs with foreground and background now correlates to base/enhancement layer treatment, and reads on the claims in question."

Appellant first submits that in arriving at the above conclusions based on the corresponding citations to Wong, i.e., column 1, lines 50-67 and column 2, lines 1-2, the Examiner appears to have inaccurately related scalability of the MPEG-2 standard to a base layer and an enhancement layer based on how the term scalability is defined in Wong. Wong merely states that the MPEG-2 standard uses bitrates based on MPEG-1 type motion compensation "plus adds scalability" which is defined, only with respect to the bitrate's effect on picture resolution and not defined based on multiple layers, wherein "a lower bitrate may be extracted to transmit a lower resolution image" (col. 2, lines 1-2).

Moreover, Appellant further submits that the Examiner has failed to demonstrate inherency to support the rejections based on the Wong reference. In accordance with MPEP §2112 "The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic." "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." MPEP §2112. The language that the Examiner quotes from



Wong merely mentions the scalability of the MPEG-2 standard in the background section of the patent, stating that "a lower bitrate may be extracted to transmit a lower resolution image." This, in and of itself, is not sufficient to show inherency with respect to limitations included in Claims 1-3. Accordingly, these limitations do not "necessarily flow" from the Wong reference as is required to demonstrate inherency, especially given all of the explicit language in Wong that the methods disclosed therein apply to single layer video compression.

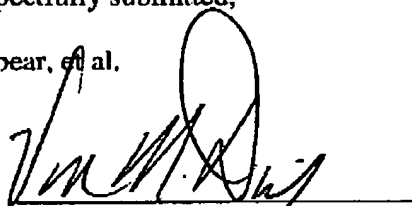
Therefore, since limitations are missing from the Wong reference, a rejection of Claims 1-3, 5-7 and 9-11 under 35 U.S.C. § 102(b) is improper and should be withdrawn.

For the reason set forth above, Applicants submit that the Examiner has incorrectly rejected Claims 1-3, 5-7 and 9-11 under 35 U.S.C. § 102(b) and request that the Board withdraw the rejection.

Respectfully submitted,

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**VIII. CLAIMS APPENDIX**

1. (original) A method of enhancing a video bit stream using temporal scalability, wherein peak signal-to-noise ratios of bidirectionally predicted pictures in an enhancement layer are determined with reference to the peak signal-to-noise ratios of pictures in another layer.
2. (original) A method of enhancing a video bit stream using temporal scalability, wherein the number of bits allocated to encode a bidirectionally predicted picture of an enhancement layer is determined with reference to the number of bits used to encode a picture of another layer.
3. (original) A method of enhancing a video bit stream using temporal scalability, wherein temporal positions of predicted pictures in an enhancement layer are determined to be spaced evenly with reference to temporal positions of pictures in other layers.
4. (previously cancelled)
5. (previously presented) A method as claimed in claim 1, wherein the peak signal-to-noise ratios are made similar.
6. (previously presented) A method as claimed claim 1, wherein the other layer is a base layer.
7. (previously presented) A method as claimed in claim 1, wherein characteristics of more than one picture in another layer are considered.
8. (previously presented) A method as claimed in claim 1, wherein:
  - (i) a first enhancement layer uses SNR scalability to produce enhanced pictures; and
  - (ii) a second enhancement layer uses temporal scalability to produce enhanced pictures, based on temporal positions of pictures in the first lower enhancement layer.

9. (previously presented) A method as claimed in claim 1, wherein an average number of bits used to define a predicted picture and an average number of bits used to define a picture in the another layer are used to define a weighting value.
10. (previously presented) An apparatus which implements a method according to-claim 1, the apparatus including:  
means for selecting temporal position, PSNR and/or number of bits of a bidirectionally predicted picture based on information relating to a picture in another layer.
11. (original) An apparatus as claimed in claim 10, which is adapted to encode video signal for transmission via a mobile communications system.

**IX. EVIDENCE APPENDIX**

No evidence has been submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132, entered by the examiner and relied upon by the appellant in the appeal, or relied upon by the examiner as to grounds of rejection to be reviewed on appeal.

**X. RELATED PROCEEDINGS APPENDIX**

No decisions have been rendered by a court of the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of 37 C.F.R. § 41.37.